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10/026,362	12/21/2001	Bernard D. Santarsiero	22700-730	8186

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EXAMINER

GAKH, YELENA G

ART UNIT

PAPER NUMBER

1743

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/026,362

Applicant(s)

SANTARSIERO ET AL.

Examiner

Yelena G. Gakh, Ph.D.

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 57-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 57-65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### 3 DETAILED ACTION

1. Amendment filed on 06/13/05 is acknowledged. Claims 57-65 are pending in the application.

#### *Response to Amendment*

2. The examiner withdraws objection to the specification regarding the definition “mother liquor” in light of the Applicants arguments and provided references. However, the specification still contains multiple typos, particularly related to the volume of the samples: it seems that in all cases the Greek letter  $\mu$  is absent from  $\mu\text{L}$ , thus leaving L as a volume measure (starting with page 4). Appropriate corrections are required.

#### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 57-65 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are not clear as to what is the difference between two “drop stations”: “a mother liquor drop station” and “a molecule drop station”, which both should be capable of delivering samples to the same place. The apparatus seems to comprise a platform and two similar liquid transferring stations capable of precise and accurate delivering nanoliter volumes of liquids to specific regions of a microtiter plate. The apparatus does not seem to have any special functions for crystallizing any compounds, not mentioning proteins.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. **Claims 57-60** are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Hayes et al. (US 5,658,802), Ershow et al. (US 5,756,050), Brown et al. (US 5,807,522), Tisone et al. (US 6,063,339), Papen et al. (US 6,079,283), Little et al. (US 2001/0008615A1) or Bienert et al. (US 2001/0019845A1).

All indicated references disclose fluid handling systems capable of delivering plurality of samples withdrawn from multiwell plates in volumes less than 25 nL (20 nL, 15 nL), the system comprising a platform on which a multiwell plate is positionable. The systems are capable of delivering nanoliter drops into microtiter plate wells, on substrates, etc., which would include

sitting drop regions. Piezoelectric valve or solenoid valve is conventionally used in these systems.

Although the references do not specifically indicate two fluid handling systems with similar capabilities, it would have been obvious for anyone of ordinary skill in the art to use two such systems, because this expands the area of application of such devices, including delivering nanoliter volumes of reagents from different reagent sources.

9. **Claims 61-65** are rejected under 35 U.S.C. 103(a) as being unpatentable over any of the prior art applied to claims 57-60 above, in view of Meltzer (US 5,873,394, IDS).

While none of the prior art recited above discloses a cover slip station, Meltzer discloses “automated sample preparation workstation for the vapor diffusion method of crystallization and method of preparation” (Title), with the apparatus comprising a cover slip station and fluid devices capable of delivering 1-10  $\mu$ L volumes of the compound to be crystallized (“a molecule drop”) and the mixing compound (“mother liquor”) to the plurality of cover slips.

It would have been obvious for any person of ordinary skill in the art to apply fluid handling systems of the prior art recited above in Meltzer’s automated sample preparation and crystallization because this application is one of numerous applications requiring handling of fluids in extremely small volumes, as indicated by Meltzer.

10. **Claims 57-65** are rejected under 35 U.S.C. 103(a) as being unpatentable over Meltzer in view of any of the prior art cited in subparagraph 12.

Melzer discloses “an automated sample preparation workstation and sample preparation method for the vapor diffusion method of crystallization which performs multiple processing functions such as pipetting, diluting, coverslip manipulations, plate greasing and the like under microprocessor control. The apparatus is responsive to operator-entered processing requests and performs complex and accurate processing functions. The disclosed apparatus is menu-driven and thus easy to learn and simple to operate” (Title). In particular, Melzer discloses “9. The small pipetting probe aspirates a small amount (1 to 10  $\mu$ L) of the compound to be crystallized from a vial and dispenses it onto the coverslip. 10. The small pipetting probe aspirates a small amount (1 to 10  $\mu$ L) from the well containing the mixing compound and places it onto the coverslip with the compound to be crystallized and mixes it” (col. 4, lines 38-44). While Melzer

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does not disclose fluid handling of smaller amounts of the samples, less than 25 nL, the prior art cited in subparagraph 12 discloses just that.

It would have been obvious for any of ordinary skill in the art to use fluid handling devices capable of manipulating with liquids of volumes less than 25 nL, as disclosed in the prior art of subparagraph 10 in Melzer's crystallization workstation, because this allows delivery of more precise and accurate volumes, decreases time for crystallization, and increases the number of experimental sites due to a smaller volume of each site.

### *Response to Arguments*

11. Applicant's arguments filed 06/13/05 have been fully considered but they are not persuasive. While the examiner may agree that decreasing volumes of protein solutions to be crystallized to nL range was not anticipated by the art, especially at the time the invention was made, the apparatus of the instant application does not carry any functions of crystallization. Basically the apparatus comprises a platform on which a microtiter plate can be placed, and two separate liquid transferring stations capable of very accurate and precise transferring of nanoliter volumes of the liquids to the precise location. Such liquid transferring stations were known in the art at the time the invention was made. The microtiter plate specifically designed for protein crystallization is not a part of the system,; neither are the mother liquor and reagent. Actually, the apparatus of the claims can be used for conducting reactions in nano-volumes, rather than for protein crystallization experiments. The examiner would like the Applicants to provide more specific data regarding the claimed apparatus, including the reasons<sup>q</sup> why the apparatus can be used exclusively for protein crystallization, rather than any other crystallization (e.g. for high-throughput analysis of peptides), or why this apparatus cannot be used for conducting any other experiments, besides crystallization.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yelena G. Gakh, Ph.D. whose telephone number is (571) 272-1257. The examiner can normally be reached on 9:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

08/02/05

  
**YELENA GAKH**  
**PRIMARY EXAMINER**